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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,876	06/29/2006	Anthony Bonnet	FR-AM2003 NP	7921
31684	7590	07/11/2011		
ARKEMA INC. 900 First Avenue Bldg 4-2 King of Prussia, PA 19406				
EXAMINER				
PAUL, JESSICA MARIE				
ART UNIT		PAPER NUMBER		
1767				
NOTIFICATION DATE		DELIVERY MODE		
07/11/2011		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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thomas.roland@arkema.com

### Office Action Summary

**Application No.**

10/584,876

**Applicant(s)**

BONNET ET AL.

**Examiner**

JESSICA PAUL

**Art Unit**

1767

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4,7-11,13-20,24-29,32-34 and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) 14-20,24-29,32-34,37 and 38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-11,13 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

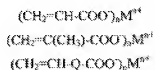
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 7-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahl et al. (WO 90/15828) in view of Rice (US Patent No. 1936994) and Gotcher et al. (US Patent No. 4353961).

Regarding claims 1, 2, and 8-10; Dahl et al. teaches radiation grafting of ETFE with ethyl acrylate [p16, line3; ex4]. ETFE resin powder (fluoropolymer) and ethyl acrylate (compound containing a single C=C double bond, and at least one polar functional group (C=O)) were heated (melt blending, instant step a) in the presence of 2.5% Irganox® 1010 [p16, line5; ex4] (stabilizer, blended before irradiation; instant claims 2, 9 and 10). The resin product was filtered and dried (reads on granules or powder, instant step b), then irradiated with electrons to a total dose of 12 Mrads [p16, line9; ex4] (instant step c). The product was then washed with diisobutyl adipate (instant step d) [p16, line10-11; ex4]. Dahl et al. teaches the fluoropolymers can be used in admixtures or compositions with various additives, such as antioxidants (Irganox® 1010) and stabilizers [p13, line37-39]. Given that Dahl et al. teaches, in a preferred embodiment, adding the antioxidant (Irganox® 1010) prior to irradiation, one having ordinary skill in the art would understand that the stabilizers would also be added

prior to irradiation also, since the fluoropolymers can be used in admixtures or compositions with various additives, such as antioxidants (Irganox® 1010) and stabilizers [p13, line37-39]. Dahl et al. teaches the fluoropolymer is useful for electrical insulation (i.e. protecting electrical conductors) [p1. ine14-20].

Dahl et al. fails to teach wherein said stabilizer is at least one graftable metal salt having one of the following formulae:



Rice teaches a polymer composition that is used for the insulation of electrical conductors [p1, line1-22], wherein 2 parts by weight (10 wt. % of the stabilizer based on 20 grams of the above ETFE resin powder (91 wt. % of the ETFE resin), as calculated by examiner) of sodium undecylenate is used as a stabilizer [p2, line138; p3, line21-22] (instant claim 8) and is added prior to vulcanization (crosslinking) via thermal energy, Dahl et al. and Rice are analogous art because both are concerned with the same field of endeavor, namely compositions useful for insulating electrical conductors. At the time of the invention, a person having ordinary skill in the art would have found it obvious to add the sodium undecylenate stabilizer, as taught by Rice, to the method for radiation grafting, as taught by Dahl et al., and would have been motivated to do so in order to produce a composition having improved shelf life and resistance to chemical change. The examiner notes that "graftable" only requires that the metal salt be capable of grafting to the fluoropolymer, not that the metal salt is actually grafted on the fluoropolymer.

Dahl et al. fails to teach the fluoropolymer is PVDF, which contains at least 85% VDF by weight. Gotcher et al. teaches melt-processible fluorocarbon polymer compositions, wherein suitable fluoropolymers include ethylene-tetrafluoroethylene (ETFE) and vinylidene fluoride (VDF) homopolymers (PVDF, 100% VDF monomers; instant claim 13) [col2, line63-68]. Therefore, Gotcher et al. teaches that ETFE and PVDF are functional equivalents for the purpose of producing melt-processible fluoropolymers for wire coatings. It is *prima facie* obvious to substitute art-recognized functional equivalents known for the same purpose (See MPEP § 2144.06).

Regarding claim 4; Dahl et al. fails to teach the stabilizer blended into the fluoropolymer after the irradiation. However, the selection of any order of mixing ingredients is a *prima facie* case of obviousness in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) and *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Therefore, it would have been obvious to one having ordinary skill in the art, at the time of the invention, to add the stabilizer prior to or after irradiation, and still achieve the same expected outcome of results.

Regarding claim 7; the limitations of claim 7, merely define aspects of the third formula of instant claim 1 ( $(\text{CH}_2=\text{CH}-\text{Q}-\text{COO}^-)_n\text{M}^{n+}$ ) and wherein M is zinc, therefore making the limitations of claim 7 optional, wherein claim 1 is rejected by which M is sodium (see above).

Regarding claim 11; Dahl et al. teaches the antioxidant (Irganox® 1010) is used in an amount of 2.5 wt. %, however Dahl et al. fails to teach the antioxidant content is 0.001 to 2% of the fluoropolymer. The experimental modification of this prior art in order

to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. See *In re Aller*, 105 USPQ 233. At the time of the invention a person having ordinary skill in the art would have found it obvious to optimize the amount of antioxidant used in the composition based on the specific fluoropolymer employed and the desired degree of stability.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahl et al. (WO 90/15828) in view of Rice (US Patent No. 1936994) and Gotcher et al. (US Patent No. 4353961), as applied to claim 1 above, and further in view of Kotliar et al. (US Patent No. 4886689)

Dahl et al., Rice, and Gotcher et al. render obvious the basic claimed method for radiation grafting of a compound that can be grafted onto a fluoropolymer, as set forth above, with respect to claim 1.

Regarding claim 39; Dahl et al. teaches radiation grafting of ETFE with ethyl acrylate (compound containing a single C=C double bond and a functional group) [p16, line3; ex4]. Dahl et al., Rice, and Gotcher et al. fail to teach the at least one graftable metal salt is grafted. Kotliar et al. teaches a fluoropolymer-polyolefin system, wherein additives are grafted onto the fluoropolymer [col8, line57-60]. Dahl et al. and Kotliar et al. are analogous art because they are both concerned with the same field of endeavor, namely processes for grafting fluoropolymers. At the time of the invention, a person having ordinary skill in the art would have found it obvious to add grafting an additive, as disclosed by Kotliar et al., to the method as disclosed by Dahl et al., and would have

been motivated to do so in order to achieve desired properties of the fluoropolymer (i.e. mechanical strength or resistance to oxidation) depending on the type of additive employed.

### ***Response to Arguments***

Applicant's arguments filed 5/12/2011 have been fully considered but they are not persuasive.

In response to applicants' arguments regarding Gotcher et al.; although the process as taught by Gotcher et al. leads to crosslinking, Gotcher et al. is only relied upon for teaching that ETFE and PVDF (starting fluoropolymers) are functional equivalents for producing shaped articles (e.g. wire coatings), not the process (i.e. crosslinking vs. grafting) to which it is subjected to. The examiner points out that Gotcher et al. teaches melt-processible fluorocarbon polymer compositions, wherein after irradiation, affords properties useful as shaped articles, especially wear constructions, which exhibit enhanced mechanical properties both at room and at elevated temperatures [col1, line61-65]. Thus the fluoropolymers, as set forth by Gotcher et al. (ETFE and PVDF) are functional equivalents for producing fluoropolymer composition suitable for wire constructions. Furthermore, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Mimura et al. and Galle et al. are only relied upon for showing evidence that ETFE and PVDF are functional equivalents for producing insulation/coatings for electric cables and/or wires.

Applicants' argue the Dahl reference fails to teach or suggest PVDF polymers or graftable metal salt stabilizers. In response to applicant's arguments against the references individually, regarding arguments in view of Dahl et al., one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants' argue while both ETFE and PVDF are thermoplastic fluoropolymers, the crystallinity differences produce difference in performance properties, as well as chemical properties. The arguments of counsel cannot take the place of evidence in the record, see in re *Schulze*, 346 F.2d 600,602, 145 USPQ 716,718 (CCPA 1965). See also MPEP 716.01(c). Nevertheless, the combination of references (Dahl et al. in view of Rice and Gotcher et al.) renders obvious the claimed composition; the applicant or applicants' need to show that their invention is actually different from and unexpectedly better than the prior art, see *In re Best*, 195 USPQ 430, 433,434 (CCPA 1977). The applicant is invited to submit any declaration under 37 CFR 1.132 to overcome the rejection based upon reference applied under 35 U.S.C. 103 (a) as set forth in this Office action to compare their invention product (i.e. crystallinity, performance properties and/or chemical properties of grafted ETFE vs. PVDF) and show the product is actually



different from and unexpectedly better than the combined teachings of the references (Dahl et al. in view of Rice and Gotcher et al).

Applicants' argue that Rice teaches away from Applicant's claims, and cannot be combined with the Dahl different technology. In response to applicant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Dahl et al. and Rice are analogous art because both are concerned with the same field of endeavor, namely compositions useful for insulating electrical conductors.

The Examiner notes that the reference to Murphy on page 3 in the Office Action dated 1/24/2011 was a typo; the proper reference is made to Dahl et al.

Applicants' argue the reactive groups of Kotliar et al. are not those claimed by Applicant as graftable metal salts, nor are they the compound containing a single C=C bond and a polar group. The Examiner notes that Kotliar et al. is only relied upon for teaching additives grafted onto the fluoropolymer-polyolefin systems [col8, line57-60]. Kotliar et al. is not relied upon for teaching the method by which it is grafted, nor the

specific additives, just that it is known in the art to graft certain additives to a fluoropolymer type system.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica Paul whose telephone number is (571)270-5453. The examiner can normally be reached on Monday thru Friday 8:00- 6:00p; alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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